B1 Cancel

3. (AMENDED) The method of Claim 1, wherein said performing step is executed prior to any lighting, fog, or texture calculations.

7. The method of Claim 1, wherein said view volume is a frustrum.

8. The method of Claim 1, wherein there are six or more planes in said view volume.

B2

9. The method of Claim 1, wherein there are six planes in said view volume.

10. The method of Claim 1, wherein there are twelve planes in said view volume.

11. The method of Claim 1, wherein said clipping algorithm is the Sutherland and Hodgman polygon clipping algorithm.

12. The method of Claim 1, wherein vertex visibility in each of said planes is indicated by a bit flag.

13. The method of Claim 1, wherein vertex visibility is indicated by twelve bit code.

B3 Cont

15. The method of Claim 1, wherein said circular buffer has a maximum storage of sixteen vertices.

16. (TWICE AMENDED) A geometry unit, comprising:

circuitry to define all vertices of a primitive using relational coordinates;

circuitry to implement a clipping algorithm which uses only a single circular buffer to store input and output vertices of a primitive; and

circuitry to set an outcode value for each of said vertices indicating whether it is visible with respect to individual planes of said view volume.

17. The geometry unit of Claim 16, wherein only vertices which are visible in all said planes are rasterized.

18. The geometry unit of Claim 16, wherein said clipping algorithm is implemented prior to any lighting, fog, or texture calculations.

19. (AMENDED) The geometry unit of Claim 16, wherein said outcode value indicates whether said vertex is visible with respect to each plane of said view volume.

20. The geometry unit of Claim 16, wherein said primitive is a triangle.

21. The geometry unit of Claim 16, wherein said relational coordinates are barycentric.

22. The geometry unit of Claim 16, wherein said view volume is a frustrum.

23. The geometry unit of Claim 16, wherein there are six or more planes in said view volume.

24. The geometry unit of Claim 16, wherein said clipping algorithm is the Sutherland and Hodgman polygon clipping algorithm.

B3 Cancel.

25. The geometry unit of Claim 16, wherein vertex visibility in each of said planes is indicated by a bit flag.

26. The geometry unit of Claim 16, wherein two circular buffers are used to store said input and output polygons.

27. The geometry unit of Claim 16, wherein said circular buffer has a maximum storage of sixteen vertices.

B4 Cont

29. (AMENDED) The pipelined graphics system of Claim 36, wherein only vertices which are visible in all said planes are rasterized.

30. (AMENDED) The pipelined graphics system of Claim 36, wherein said clipping is implemented prior to any lighting, fog, or texture calculations.

31. (AMENDED) The pipelined graphics system of Claim 36, wherein said primitive is a triangle.

32. (AMENDED) The pipelined graphics system of Claim 36, wherein said view volume is a frustrum.

33. (AMENDED) The pipelined graphics system of Claim 36, wherein there are six or more planes in said view volume.

34. (AMENDED) The pipelined graphics system of Claim 36, wherein said clipping uses the Sutherland and Hodgman polygon clipping algorithm.

35. (AMENDED) The pipelined graphics system of Claim 36, wherein vertex visibility in each of said planes is indicated by a bit flag.

~~36. (AMENDED) A pipelined graphics system, comprising:~~

a transformation unit connected to:

transform a primitive into a clipping space, and

assign a fixed barycentric coordinate to each vertex of said primitive; and

a geometry unit connected to:

perform clip testing on said primitives,

clip said primitives, if necessary, according to said fixed barycentric coordinates, and

set an outcode value for each said vertex indicating whether it is visible with respect to each plane of a view volume;

wherein two circular buffers are used to store said input and output polygons.

37. (AMENDED) The pipelined graphics system of Claim 36, wherein said circular buffer has a maximum storage of sixteen vertices.

47. The method of Claim 1, further comprising defining all said vertices of said primitive using relational coordinates.

48. A computer system comprising:
display hardware;
a processor connected to provide graphics data;
a geometry and lighting accelerator connected to receive said graphics data, said geometry and lighting accelerator comprising
a transformation unit connected to transform a primitive into a clipping space, and
a geometry unit connected to
perform clip testing on said primitives,
clip said primitives, if necessary,
set an outcode value for each said vertex indicating whether it is visible with respect to each plane of a view volume, and
output clipped graphics data to be rendered; and
video rendering hardware connected to receive said clipped graphics data and to generate graphics, and connected to display said graphics on said display hardware;
wherein said geometry unit uses only a single circular buffer to store input and output vertices of said primitive.

B 5
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49. The computer system of Claim 48, wherein said clipping is implemented prior to any lighting, fog, or texture calculations.

50. The computer system of Claim 48, wherein said primitive is a triangle.

51. The computer system of Claim 48, wherein said clipping uses the Sutherland and Hodgman polygon clipping algorithm.

52. The computer system of Claim 48, wherein vertex visibility in each of said planes is indicated by a bit flag.

IN THE CLAIMS

The claims have been amended as follows:

1. **(AMENDED)** A method for clipping graphics primitives for display, comprising the steps of:

[defining all vertices of a primitive using relational coordinates;]

[using] performing a clipping algorithm [with a] which uses only a single circular buffer to store input and output [polygons] vertices of [said] a primitive; and

for each [vertex of said polygons:] one of said vertices, indicating whether [it] said one of said vertices is visible with respect to each plane of a view volume.

3. **(AMENDED)** The method of Claim 1, wherein said [using] performing step is [performed] executed prior to any lighting, fog, or texture calculations.

Please cancel Claims 4-6 without prejudice to their reintroduction in a continuation.

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16. **(TWICE AMENDED)** A geometry unit, comprising:

circuitry to define all vertices of a primitive using relational coordinates;

circuitry to implement a clipping algorithm [with a circular buffer] which uses only a single circular buffer to store input and output [polygons] vertices of [said] a primitive; and

circuitry to set an outcode value for each of said [vertex] vertices indicating whether it is visible with respect to individual planes of said view volume.

Please cancel Claims 39-46 without prejudice to their reintroduction in a continuation.

Please add Claims 47-52 as shown below:

--47. The method of Claim 1, further comprising defining all said vertices of said primitive using relational coordinates.

--48. A computer system comprising:
display hardware;
a processor connected to provide graphics data;
a geometry and lighting accelerator connected to receive said graphics data, said geometry and lighting accelerator comprising
a transformation unit connected to transform a primitive into a clipping space, and
a geometry unit connected to
perform clip testing on said primitives,
clip said primitives, if necessary,
set an outcode value for each said vertex indicating whether it is visible with respect to each plane of a view volume, and
output clipped graphics data to be rendered; and
video rendering hardware connected to receive said clipped graphics data and to generate graphics, and connected to display said graphics on said display hardware;
wherein said geometry unit uses only a single circular buffer to store input and output vertices of said primitive.

--49. The computer system of Claim 48, wherein said clipping is implemented prior to any lighting, fog, or texture calculations.

--50. The computer system of Claim 48, wherein said primitive is a triangle.

--51. The computer system of Claim 48, wherein said clipping uses the Sutherland and Hodgman polygon clipping algorithm.

--52. The computer system of Claim 48, wherein vertex visibility in each of said planes is indicated by a bit flag.